

**Amendments to the Drawings:**

The attached sheet of drawings includes changes to Fig. 3. This sheet replaces the original sheet including Fig. 3. In Fig. 3, the compensation layer, which was previously identified by reference number 180, is now identified by reference number 181.

Attachment: Replacement Sheet

### **REMARKS/ARGUMENTS**

We have amended claims 4, 8, 9, and 12 to address the examiner concerns regarding those claims. We have also added a new claims 35 and 36 which depend from claims 28 and 1, respectively. Upon entering the amendments identified herein claims 1-36 will be pending in this application.

We acknowledge the examiner's indication that claims 28-34 are allowed and that claims 3, 4, 7, 9, 10, 15-22, 24, and 25 would be allowable if written in independent form.

The examiner rejected claims 1, 2, 5-6, 8, 11-14, 23, 26, and 27 under 35 U.S.C. §102(e) as anticipated by U.S. Patent 6,597,721 to Hutchinson et al. (hereinafter "Hutchinson").

The examiner characterized Hutchinson as disclosing an array of dielectric-filled, guided-wave cavities in the cladding extending transversely from the dielectric core and forming an array of apertures through which optical energy that is introduced into the core exits from the core, as required by claims 1, 27, and 28. More specifically the examiner argued that Hutchinson discloses:

...an array of dielectric-filled, guided-wave cavities 510 in the first dielectric cladding 632 extending transversely from the dielectric core into the first dielectric cladding (see column 8, lines 13-17) and forming an array of apertures through which optical energy (640) that is introduced into the core exits from the core.

But we believe the examiner is mistaken in characterizing Hutchinson's PBG features 510 as representing an array of apertures "through which optical energy that is introduced into the core exists from the core."

According to Hutchinson, the PBG features in his structure are added to modify the band structure of the crystal and to fabricate from that material a micro-laser that emits its light beam in a direction that is aligned with the waveguide (see Figs. 3(a) and 6).

We could find no teaching or suggestion by Hutchinson that any optical energy is meant to or does indeed exit through the PBG holes that in the one embodiment extend into the cladding. Indeed, the stated purpose for allowing the PBG structures to extend into the cladding is to reduce the likelihood that electromagnetic energy will escape through the cladding where the PBG features are located. Hutchinson states:

In instances when a cladding layer 404 is used, depending on the relative refractive indexes of the waveguide 403, the cladding layer 404 and the material filling PBG features 410 . . . 497, it may be desirable to extend the PBG features 410 . . . 497 into the cladding layer 404 as shown in FIG. 4 to avoid localized refractive index inversion regions. A localized refractive index inversion region is a region where the localized refractive index of the cladding layer 404 exceeds the effective refractive index of the waveguide 403. If this inversion condition results, the operation of the TLIR 400 may be degraded due to significant electromagnetic energy escaping the waveguide 403 in favor of the higher relative refractive index cladding layer 404. If the nominal waveguide 403 refractive index is only slightly greater than that of the cladding layer 404, introduction of PBG features 410 . . . 497 can result in the cladding layer 404 having a higher refractive index compared to the waveguide 403 in waveguide regions that surround PBG features 410 . . . 497. Etching PBG features 410 . . . 497 into the cladding layer 404 can reduce the effective refractive index of the cladding layer 404 in the vicinity of PBG features 410 . . . 497 to help avoid a refractive index inversion. [emphasis added] (col. 19, lines 38-59).

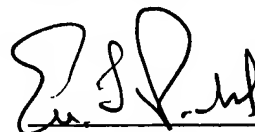
We also could find no indication that the cavities to which the examiner refers were “guided-wave cavities,” as recited in the independent claims.

For the reasons stated above, we believe that the claims are allowable and therefore ask the Examiner to allow them to issue.

Please apply any charges not covered, or any credits, to Deposit Account No. 08-0219.

Respectfully submitted,

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